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		3. Packing and Marking for PA113 Container	
19. ABSTRACT (Continue on reverse if necessary and identify by block number) This report contains the test procedures and test results for Performance Oriented Packaging (POP) tests performed on the PA113 Ammunition Container. The container with appropriate dunnage holds two (2) mine canisters. Each mine canister type as referenced are packed in the same way as shown on the Packing and Marking Drawing (9392425).			
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93-18988



1. DATA SHEET

Container:

Type: Metal, Square Rim, PA113

UN Code: 1A2

Specification: Mil-C-70734

Capacity: 2768.43 cubic inches

Dimensions: 59.00 in x 6.85 in x 6.85 in

Packing and Marking Drawing: 9392425

Gross Weight: 11.34 kg (25.0 lbs)

NSN: 8140-01-294-6392

Loaded Weight: 88.0 lbs

Product 1:

Name: Canister, Mine M87

NSN: 1345-01-233-2029

Part Number: 9366491

Proper Shipping Name: Mines

Identification Number: 0137

Physical State: Solid

Quantity per Container: 2

Product 2:

Name: Canister, Mine Practice, M88

NSN: 1345-01-233-2030

Part Number: 9385171

Proper Shipping Name: Cartridges Power Device

Identification Number: 0276

Physical State: Solid

Quantity per Container: 2

Product 3:

Name: Canister, Mine M87E1

NSN: TBD

Part Number: 12953430

Proper Shipping Name: Mines

Identification Number: 0137

Physical State: Solid

Quantity per Container: 2

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2. BACKGROUND

The Department of Transportation (DOT) per CFR 49, Parts 100-180, dated 1 Oct 92, requires that hazardous materials should be packed in a container that passes the Performance Oriented Packaging (POP) tests.

Ammunition container, Part No. 9390404, is being used as a shipping container for the Canister, Mine M87/M87E1, Canister, Mine Training M88, and Canister, Mine Training M89. The purpose of these tests was to performed Stack and Loose Cargo tests. The containers used in this report had previously been fielded and they were not newly manufactured containers. However, they were previously subjected to drop tests not Stack or Loose Cargo tests.

An engineering evaluation of the PA113 ammunition container was performed as referenced in Environmental Test Section Report No. 5-87, dated September 1987. The tests performed were 3' and 7' drop. Loose cargo test was also done except the containers were vibrated for a period of 1/2 hour.

Stacking tests on the PA113 ammunition container was conducted on the actual pallet as referenced in MIL-STD-1660 tests of Volcano Pallet and Pallet Adapter Report No. EVT 15-90-1, dated August 1990. The duration of the test performed was one hour.

It should be noted that the PA113 Ammunition Container used to packaged the Volcano Mine Canisters is packed in an unauthorized outer container (Steel Drum with removable head "1A2"). Competent Authority Approval (CAA) was given as follows:

CA-9111002 for UN 0137, dated 13 Nov 91
CA-9111003 for UN 0276, dated 26 Mar 92

3. Testing and Test Results

a. Stacking Test:

Section 178.606 of CFR 49 requires that the minimum height of the stack including the test sample must be 3.0 meters (10 ft). The duration of the test must be for 24 hours and the stacked packages must be able to maintain their position for one hour. Three test samples are required.

Each container was packed with lead weights and sand to simulate the weight of a loaded container (88.0 lbs). The containers were then pressure tested prior to the start of the test, all containers passed the pressure test. The stacking test was performed with the use of a forklift to apply a dead load of 2600 pounds uniformly across the 3 test samples.

At the end of 24 hours, each of the 3 packages adequately supported the applied load. There was no evidence of leakage or spillage of the contents from the container and no evidence of package distortion was noted. A second pressure test was conducted at the end of this test, all containers passed.

b. Loose Cargo Test:

Section 178.608 Vibration Standards of CFR 49 requires that three (3) containers must be vibrated for a period of one hour. The test must be performed at a frequency that causes the package to be raised from the vibrating platform to such a degree that a piece of material of approximately 1.6 mm (0.063 inch) thickness can be passed between the bottom of any package and the platform.

Each container was loaded with inert M89 Training Canisters along with its applicable dunnage as referenced on drawing 9392425. The containers were then pressure tested prior to the start of the test, all containers passed the pressure test.

Three (3) containers were placed on the vibrating platform and vibrated for a duration of one hour. The containers were unrestrained except horizontally to prevent them from falling off the platform. The frequency was set at 280 rpm. This was sufficient enough to allow 1/16" thick piece of strapping material to be slid underneath the package during testing.

All containers were removed from the vibrating platform after one hour. Each container was turned on its side and inspected for damage and leakage. There was no evidence of deterioration, rupture or leakage of the ammunition container. A second pressure test was conducted at the end of this test, all containers passed.

c. Drop Tests:

Section 178.603 of CFR 49 specifies that six containers (three for each drop) should be used for each drop orientation. 12 containers as referenced in Environmental Test Section Test Report No. 5-87, dated September 1987 were drop tested as follows:

3' Drop Tests

2 Containers at -65 F
2 Containers at +72 F
2 Containers at +160 F

7' Drop Test

2 Containers at -65 F
2 Containers at +72 F
2 Containers at +160 F

Since only the 4' drop test is required and the 7' drop tests is over and above what is required, the 7' drop test data will be used. At the conclusion of the 7' drop test as reference above, there was no spillage of the contents from the ammunition containers.

4. CONCLUSION:

This packaging configuration has successfully met the requirements of Performance Oriented Packaging Testing (no leakage or spillage of contents from the packaging) and is considered safe for domestic and international shipment.

REMARK

Based on the successful POP testing outlined in this report, the following POP symbol:



1A2/Y40/s / ☐ ☐
USA/DOD/AYD

INSERT YEAR OF PACKOUT SHOWN
IN LOT NUMBER OR YEAR PACKOUT
IS LATER RECONDITIONED.

shall be applied to drawing 9392425.